

FINAL MEETING SUMMARY
HANFORD ADVISORY BOARD
RIVER AND PLATEAU COMMITTEE MEETING
April 12, 2006
Richland, WA

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<i>This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.</i>

Welcome and Introductions

Pam Larsen, River and Plateau Committee Vice-Chair, welcomed the committee and introductions were made. Comments were incorporated into the February meeting summary, and the summary was adopted.

Groundwater Integration Discussion

The committee continued a previous discussion on Hanford groundwater integration from the February meeting. Based on the committee's discussion and identification of key groundwater issues, a groundwater tutorial will be developed for the June Board meeting.

Groundwater - What We Have Now

Shelley Cimon indicated that current 3-D maps of Hanford groundwater contamination would be useful for understanding each of the 10 groundwater operable units and the integration of all the units as a foundation for developing the Board's values-based product on groundwater. Mike said DOE-RL has high quality 2-D maps, but

complexities with the Hanford subsurface geology make 3-D maps difficult to produce. He said he could provide the most detailed map information possible for the tutorial.

The Board's priorities for 2006 direct the Board to prioritize cleanup activities in the face of reduced funding and resources. Shelley indicated that groundwater issues are a priority for the Board. She envisions the Board producing a values-based product on groundwater, similar to the decision flow path product that was developed to help guide cleanup decisions on the Central Plateau.

Committee Discussion

The committee discussion of groundwater issues focused on two parallel topics:

- 1) Identifying the mechanics and information needs for a groundwater tutorial at the June Board meeting.
- 2) Developing key questions that should be addressed by the Board's values-based product.

- Dennis Faulk, Environmental Protection Agency (EPA), provided the committee with the questions EPA is struggling with regarding groundwater:
 - What does return to highest beneficial use mean?
 - How does time factor in?
 - How does cost factor in if the water is not currently used as a drinking source?

Dennis believes the committee should focus on understanding the history of groundwater issues at Hanford, which is important for both understanding the current status and determining the future direction of groundwater decisions. He indicated the 2005 Groundwater Annual Report is available, and suggested the groundwater maps from the report could be used for the Board tutorial.

- Greg deBruler said the groundwater tutorial will provide background for new Board members. He said one of the most important questions relating to groundwater is whether cleanup schedules are realistic and appropriate?
- Jerry Peltier questioned whether contamination reaching the river is a very serious concern relative to other significant contributing sources of contamination and the volume of the Columbia River. *Would contamination in the river appear in significant levels if contaminants were allowed to flow through the groundwater and into the river?* Greg said results of evaluations of the contaminant isotopes at Hanford indicate that some pose a significant risk to human and environmental health. He said determining what is an acceptable risk or level of potential resource damage (short-term versus long-term) will drive the discussion of values. Dennis added that concern about contamination depends on the contaminant.
- Since there are known contaminants of concern, Jerry said it is important to identify the management tool for addressing current contamination and keep contaminants from migrating into the river. In addition to addressing existing contamination, Greg

added that it is also important to consider long-term contamination impacts and the migration potential of certain contaminants.

- *What is Hanford's contribution to the level of contamination in the river?* Greg said that depends on the contaminant. Jeff Luke said some state or federal entity used to sample the river's water and riverbed sediments starting above and below the Hanford site. He said he would try to determine which entity was responsible for sampling, and whether any sampling is currently done. Greg emphasized that remediation of groundwater and river contamination should focus on returning the resources to their highest beneficial use, which will require definition.
- *Have any useful results been obtained from recently drilled monitoring wells or groundwater studies during the past five years?* Greg said Stan Sobczyk, Nez Perce Tribe, and Dib Goswami, Washington State Department of Ecology (Ecology), have good information on groundwater contamination. He commented that it is important for the Board to determine its position on groundwater contamination issues and express to the regulators its expectations in terms of what contamination and remediation levels are acceptable (i.e., How clean is clean?)
- Dib suggested the Board groundwater tutorial might focus on what is known about the nature of Hanford groundwater, what characterization and remediation work has been done to date, and where uncertainties exist.

The committee discussed the mechanics of presenting a groundwater tutorial to the Board.

- Greg said the agenda for the committee meeting could serve as a good "straw dog" agenda for the groundwater tutorial.
- Shelley suggested categorizing groundwater issues by each groundwater operable unit. Dennis recommended bunching the groundwater operable units into three main areas: 1) 100 Area and Reactors; 2) 300 Area; and 3) 200 Area. Greg commented that it is important to consider the long-term issues relating to the groundwater operable units.
- Greg said the presentation of groundwater issues could show the contamination plumes, show the conceptual 3-D model the Department of Energy (DOE) is using, and provide a comparison between the models used in the Tank Closure Environmental Impact Statement (TC EIS) and the Hanford Solid Waste Environmental Impact Statement (HSW EIS) to demonstrate modeling uncertainties.
- Shelley commented that it is important for the Board to understand the migration of the various contaminants.
- There was general committee agreement that it is important for the Board to understand the tools DOE is using to address groundwater contamination.
- Committee members agreed that Mike Thompson, Department of Energy – Richland Operations Office (DOE-RL), should introduce groundwater issues for the tutorial, including description of the current condition of contaminants and what DOE is doing to address the contamination. The presentation should also include a description of the migration of contaminant plumes toward the river over time.

- *Have any of the techniques DOE has used to remediate groundwater contamination been successful?* Dennis indicated that identifying successful groundwater remediation techniques should be a component of DOE's groundwater tutorial presentation of what has been done, the current status, and future direction. He said remediation efforts have focused on strontium (⁹⁰Sr), chromium (CrVI), and uranium; however, there are several contaminants and groundwater operable units that have not yet been characterized or addressed. DOE and the regulatory agencies are beginning to increase their groundwater contamination remediation efforts, and it is important for them to understand the public's priorities for addressing uncharacterized contaminants. Several uncharacterized contaminants could potentially act as risk drivers, so it is crucial to understand the risk associated with not addressing these contaminants.
- *How can DOE propose considering the 100 Area clean by 2012 without addressing the several contamination plumes that are moving towards the 100 Area?* Due to the potential for contaminant migration, there was general committee agreement that contamination in the 200 Area must be addressed for DOE to declare victory in the 100 Area. Jeff Luke commented that it would be interesting to hear what DOE's criteria are for determining an area clean in terms of its contaminant contribution. He suggested that DOE should also describe the contamination relationships between various areas at Hanford, which would help the Board understand how DOE will make remediation decisions. Greg suggested using a time lapse conceptual model to show how contaminants move over time.
- *In June, will DOE-RL know what remediation technologies will be selected from the \$10 million Congressional earmark?* Mike said DOE-RL will have selected the remediation technologies by June.

Groundwater - Regulatory Requirements

John Price, Ecology, provided information on State of Washington regulatory requirements for Hanford cleanup. He noted that the Model Toxics Control Act (MTCA) does not apply to Hanford, but several MTCA requirements serve as applicable or relevant and appropriate requirements (ARARs) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for Hanford cleanup. MTCA regulations establish "highest beneficial use" for a contaminated resource. Under MTCA regulations, water resources are considered potable unless they are not currently used as a drinking water source or are not a potential future source of drinking water.

John presented the nine key factors for restoring groundwater in a reasonable restoration timeframe under Washington Administrative Code 173-340-360(4)(b).

- (i) Potential risks to human health and the environment;
- (ii) Practicability of achieving a shorter restoration time frame;
- (iii) Current use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;
- (iv) Potential future use of the site;

- (v) Availability of alternative water supplies;
- (vi) Likely effectiveness and reliability of institutional controls;
- (vii) Ability to control and monitor migration of hazardous substances from the site;
- (viii) Toxicity of the hazardous substances at the site;
- (ix) Natural Processes that reduce concentrations of hazardous substances and have been documented to occur at the site or under similar site conditions.

Of these nine factors, John noted that the Board may want to focus especially on discussing whether the remediation technologies are appropriate (ii), the potential future use of the site and existing resources (iv), and institutional control issues relative to groundwater cleanup (vi). He said federal and state laws are very similar, but federal law has more requirements spelled out in the law, while state law has more requirements spelled out in guidance.

Dennis said EPA's goal is to return the groundwater to its highest beneficial use. If that is not achievable, EPA is looking for strategies to address specific contaminants. He said establishing alternate concentration limits (ACLs) is no longer being used. In areas where highest beneficial use cannot be achieved, EPA is looking at using technical impracticability (TI) waivers. He said TI waivers are similar to containment strategies for addressing contamination. He also noted that EPA is moving away from traditional monitored natural attenuation (MNA) remedies, and are writing new MNA guidance.

Committee Discussion

- *How are moving contaminant plumes addressed in terms of remediation?* Dennis said the issue of moving plumes is something that still needs to be dealt with. Mike said there is contamination in certain areas that could preclude those areas from ever being returned to their highest and best use. Instead, he said DOE employs an approach to locate and stabilize the plume, and determine if there is a way to aggressively apply supplemental treatment in addition to MNA.
- Gerry Pollet agreed with EPA's decision to move away from using ACLs as a remediation approach. However, he expressed concern about using a changing point of compliance approach for groundwater remediation. He wondered whether resetting points of compliance violates state law, since it would affect the timing of cumulative impact assessments and cleanup and closure milestones. Dennis said resetting points of compliance might not be that out of line with state law, since EPA uses the same points of compliance as Ecology. Furthermore, the heart of contamination plumes are already in a containment-type strategy, so changing a point of compliance will mean changing how the waste management unit is defined. EPA is also looking at use of the approach nationally. John added that Ecology and EPA work closely on determining points of compliance. Gerry said he would expect to receive significant description of the changing parameters (e.g., monitoring, enforceability, etc.) when a point of compliance is extended.
- Greg expressed concern that using TI waivers would affect DOE's trust responsibility to the tribes. *If DOE allows contaminants to migrate to other resources, how does*

DOE plan to compensate for such takings under a TI waiver? If a TI waiver is used, he suggested the Tri-Party Agreement agencies should have to demonstrate funding exists for using adequate science and technology to minimize the spread of contaminants. Shelley said she believes a TI waiver would trigger mandatory containment of the contamination plume. Dennis added that the goal is ultimately to contain contaminants that cannot be immediately remedied, to maintain flexibility so that if conditions change or new technologies are developed the resource can be remedied to its highest and best use.

- Gerry commented that the regulatory agencies focus on the goal to cleanup the groundwater, but the Board wants to know how groundwater remediation will actually be carried out, including what is included in Resource Conservation and Recovery Act (RCRA) permits and what the groundwater monitoring requirements are. John said the regulatory agencies are required to focus on the goal of remediating groundwater to its highest and best use. They cannot back away from the goal until there is a public review and decision to do so. Gerry said the goal is good, but the agencies should examine a couple of groundwater operable units to determine how remediation would actually take place. Dennis said the regulatory agencies are in the process of looking at groundwater contamination remedies at two groundwater operable units.
- Pam said the tutorial should include an example where a groundwater contamination remediation decision has been made. Dennis said a groundwater decision has been made on strontium in the 100-N Area and on uranium in the 300 Area, which could be used as examples. In addition, carbon tetrachloride in the 200 ZP-1 Area could be used as an example, to describe the problem and how a remediation approach was developed.
- In addition to the CERCLA examples in the 100 Area, 200 Area, and 300 Area, Gerry said an example of groundwater contamination remediation at a RCRA site would be useful for the tutorial. Dib Goswami, Ecology, indicated the groundwater under the tank farms could be used as an example RCRA area.

Groundwater - Trust responsibility and Natural Resources Damage Assessment (NRDA)

John Stanfill, Nez Perce Tribe, and Wade Riggsbee, Yakama Nation, described tribal expectations for groundwater and River Corridor cleanup. John said the Columbia River is one of the major concerns of the Nez Perce Tribe. The tribe has historically used the river as means of survival, depending on the river for food and as a source of water. The tribe consumes high quantities of fish and clams, and they are very concerned about the accumulated levels of contaminants, even in small quantities, in the river's biota.

John said treaties assume the tribe's right to use the river resource, and the tribe expects to continue to utilize this area for the rest of time. The tribes expect Hanford cleanup will enable them to use the river and land in the same way they did in 1940, when DOE

assumed control of the area. Assessing natural resource damage will be part of future discussions.

Wade said the river and corridor area is fundamentally important to the Yakama Nation, and the level of groundwater and river contamination is of great concern to the tribe. Since contamination is not well-characterized, the Yakama Nation has attempted to define contaminants, such as chemicals in salmon, but many uncertainties exist about contaminants in the river. There is a need for improved characterization and analyses. The Natural Resource Trustee Council (NRTC) is compiling studies done on the river, but there are still multiple gaps. A transport analysis of what contaminants went into the river and where they might currently reside has never been done. The Yakama Nation is trying to assess cleanup decisions and closure plans in the river corridor, and they are currently involved in a dispute with DOE over final end state decisions.

Committee Discussion

- *Are the tribes focused on protecting the area because it is the last “untouched” stretch of the Columbia River?* John said the Nez Perce Tribe is interested in maintaining the area’s high quality natural resources.
- The committee discussed the NRDA process. Wade indicated that all members of the NRTC have legal councils focused on NRDA issues. In theory, Greg said if DOE released the Hanford site as “clean,” there would be resource damages that would have to be assessed through the NRDA process. John Price said that money from settlements does not go to the tribes, but instead back into remediation for the damaged resource. Dennis said restoration under NRDA can take many different forms, such as the Environmental Restoration Disposal Facility (ERDF) partners and trustees reestablishing shrub-steppe at an alternative location to off-set the damage to the original shrub-steppe habitat at ERDF.
- The committee agreed a tutorial on NRDA is necessary for the Board. The committee decided to invite Russell Jim, Yakama Nation, to provide an overview of the trust responsibility and to ask Dennis to discuss NRDA from EPA’s standpoint.
- *Do the tribes have comments on the needs for getting more information and data on groundwater contamination?* Wade said the Yakama Nation has issues with the groundwater conceptual model. Part of the discussion in the settlement between DOE and the Yakama Nation, is to determine how to do conceptual modeling and how accurate the conceptual models are. The Yakama Nation is currently trying to put conceptual models together to determine their adequacy.
- *Has an equal amount of sampling of salmon been performed above and below Priest Rapids Dam?* Wade said EPA performed a focused set of studies, and is trying to obtain funding to get data and information to study contaminants in salmon along the entire length of the Columbia River. John Stanfill said EPA’s initial study of contaminants in salmon provided some good information, but was not an adequate, complete study.

- Gerry emphasized the Board should hear about the need for additional contaminant characterization data and information.
- The committee discussed using fact sheets or other information pieces on NRTC and NRDA for the tutorial in lieu of having a series of speakers.
- Wade expressed concern that the discussion of the difference between NRTC and NRDA could take away from the focus on groundwater? There was general committee agreement this could be an issue.

Groundwater Around the DOE Complex

Greg presented information on groundwater issues across the DOE complex. He said RESOLVE provided grant funding to Columbia Riverkeeper to examine groundwater issues at other DOE sites throughout the country, and determine whether the groundwater will be clean when other DOE sites are closed. He said the fundamental problem is whether there is enough characterization information to determine how clean the groundwater is. At some sites there are plans to delay considering the impacts of contamination to groundwater to a future date, while at the same time maintaining the sites will reach a specified clean state. Therefore, some sites seem to be depending on the ability of institutional controls to keep the groundwater contaminant dose down. In addition, Greg said there tends to be a significant lack of groundwater contaminant characterization data.

Greg discussed how groundwater issues at other DOE sites apply to Hanford. He commented that there seems to be a corporate mentality to the pattern and strategy behind DOE's approach to arrive at their desired end state as quickly and cheaply as possible. He said this approach should be examined during evaluations of cleanup end states. He indicated the plan to clean up the river by 2012 is unrealistic, and wondered how that impacts the end state.

Committee Discussion

- Gerry suggested it would be useful for the Board to hear a very brief presentation of groundwater issues at other DOE sites. *Are there any state regulatory approaches that Hanford can learn from?* Greg said Washington has the best state regulatory approach he has seen; however, he did not look at DOE sites in California.
- When considering comparisons of Hanford groundwater issues to groundwater issues at other DOE sites, Dennis said it is important to keep in mind that groundwater conditions vary widely across different DOE sites.

Groundwater - Conceptual Models

Joe Caggiano, Ecology, provided information on the value of a conceptual model for adequate site characterization. He described the difference between conceptual and numerical models, and outlined the uses and limitations of each. He also described various parameters for model testing. As an example, he provided a general conceptual model for how water and contaminants might tend to move through the sediments and the vadose zone at the Hanford site. He emphasized that flawed characterization and understated risk are the major consequences resulting from an inadequate conceptual model.

Committee Discussion

- *How are parameters defined for conceptual models?* Joe said it is important to have the right values (such as K_d) for how the contaminants move through the soil. Jeff commented that there are likely quite a number of parameters that should be included in a conceptual model, which may not be agreed upon. Joe said there is a range of uncertainty. If input parameters do not have credibility, he emphasized that the model's results will have less credibility.
- Dick commented that although model results may not accurately describe real conditions, they are useful for making comparisons of radionuclide movement. Joe added that models should be considered tools to predict conditions, and it should be recognized that parameter values are not absolute.
- Steve White said he supports the use of models, and suggested the Board should review and make recommendations on model input parameters. Joe said a conceptual model guides characterization, and the conceptual plan uses the conceptual model to describe the work to be done.
- Greg emphasized the Board should discuss how decision makers use modeling results, and how modeling uncertainty plays into the decision-making process.
- *How much characterization should be done to adequately inform conceptual models?* Joe said numerical models could be used to determine which parameters need more definition. Since models have a range of uncertainty, Dib said effort should be focused on trying to identify the uncertainties and determine what can be done to reduce them. He added that determining what portion of a model's uncertainty has the most impact or significance is also very useful.
- Dick commented that the entire inventory of contaminants ultimately ends up in the groundwater, so setting modeling parameters is more difficult to get right than simply assuming all contamination will reach the river. Mike said contaminant characterization and groundwater remediation involve an incredibly complex combination of inventory, geochemistry, and long-term impact issues. A model's reliability is based on knowing the inputs, framework of geology, timeframe, etc.
- Frank Anderson, CH2M Hill (CHG) – project manager for the Vadose Zone Groundwater Project, said it is important to recognize the complexity of the groundwater and vadose zone system in the field. He said models are used as

simplifications of real world conditions. Modeling uncertainty can never be eliminated no matter how much time is spent gathering data. He cautioned against falling into the trap of discarding conceptual models because they may not be detailed enough. He emphasized that conceptual models can provide useful comparisons of what is known, in order to help make decisions. Dennis added that modeling is a tool. As a decision-maker, he said decisions are ultimately made based on gut feeling. If real conditions do not match the model, then modeling results should be discounted in favor of the real conditions in the decision-making process.

- Fred Mann, CHG, said worst-case scenarios were developed for immobilized low-activity waste (ILAW), to determine the consequences if the conceptual models are inaccurate.
- Greg said he agrees with the use of worst-case scenarios, but is concerned they are not utilized appropriately or adequately in model development. Fred said several assumptions are made to evaluate models. Greg emphasized DOE should work to integrate worst-case scenarios into model evaluation. Jerry cautioned that any time a worst-case scenario is developed, an assessment of the probability of it happening should also be performed to determine if and what action should be taken. Jerri Main added that the worst-case scenario might not result in worst consequence.
- Nancy Murray suggested a simplified concept of modeling should be provided during the tutorial, which would provide a description of a model as a simplification tool used to better understand conditions, one factor in the decision-making process, and that final decisions should not be made based solely on modeling results. John Stanfill agreed that the tutorial should not include a discussion of the mechanics of a model, but instead should focus on providing an understanding of why models are used, how model results are used, and why it is important to use models.
- Dennis said the sensitivity of modeling parameters is a very important consideration.
- Fred commented that the Board usually looks at end results; however, for modeling it is more important to weigh in at the beginning. He said the Board could be of the most help by evaluating parameter selection, rather than advising that models are not very useful. Jerri commented that since the development of assumptions is the most important part of the model development process, the Board should focus on discussing model assumptions and why are they important.
- *Would it be useful to the regulatory agencies for the Board to develop a set of values-based questions for model parameter selection?* Since there is inherent uncertainty in conceptual models, Dennis said it would be useful for the regulatory agencies to hear from the Board how much modeling uncertainty is appropriate. Dib said the Board should understand that modeling is a must for addressing Hanford contamination, but how modeling is used and to what purpose is up for consideration.
- Some committee members said they believe the Board needs to understand why and how previous models in the TC EIS and HSW EIS were determined to be faulty and were discarded. Jeff expressed concern about a tutorial discussion focusing on specific models, especially those that have previously failed, since several Board members have strong opinions about those models, which could subvert the broader

discussion of the use of modeling at Hanford. He said Joe Caggiano's presentation of conceptual and numerical modeling provides a good general perspective of what a conceptual model provides and why conceptual models are used. The committee agreed Joe should provide a high-level presentation on conceptual models at the tutorial. Dennis said one-page information sheets on conceptual and numerical models should be provided. Alternatively, Jeff suggested Joe could provide a shortened, modified presentation.

- *Is there an example to show how conceptual and numeric models were developed at Hanford?* Mike said the discussion of contamination in the 100-N Area could incorporate information about the development of both models used for the remediation approach being used. In the 300 Area, information on the previous Interim Action model and the current model could be provided.
- Frank said there are several current studies at Hanford that rely heavily on modeling. The Board will have to deal with these studies in the near future, and should be sophisticated enough to appropriately consider and address these studies. Pam said it is important for Board members to have enough knowledge to have confidence in the modeling results. This is particularly important for evaluating the Tank Closure and Waste Management Environmental Impact Statement (TC&WM EIS).
- *What is the process for validating a model once it is complete?* Mike said models can be validated against existing data. There are various scales of models, which provide a numerical method of calculating groundwater flow based on various parameters. A geochemical model can be added to predict interactions of contaminants with the groundwater and soil chemistry. Flow uncertainties make model validation very difficult, so models should be run with different flow paths. Fred added that when new data is obtained, it is evaluated in terms of how it impacts the model, and whether the model needs to change as a result. Dennis said EPA has the United States Geological Survey (USGS) check DOE's modeling work.

The committee developed a series of questions about modeling for the Board tutorial:

- What does a conceptual model give you?
- Why do a conceptual model?
- How do decision makers use modeling?
- Why is modeling important?
- What should Board know about modeling (i.e., pending release of important decisions and studies based largely on modeling)?

Agency Updates

Karen Lutz, DOE-RL, updated the committee on the status of the CERCLA 5-Year Review. DOE-RL is preparing responses to initial comments from the regulatory agencies. She said it is yet-to-be-determined when the document will be issued for public review. Dennis said EPA plans to provide a formal review during the public comment period. John said Ecology also plans to submit a formal review during the public comment period. Karen noted that the public comment period might span the June Board

meeting. The committee agreed the CERCLA 5-Year Review should be a significant agenda item for the committee meeting in May.

Dennis said EPA has been working on the M-15 Change Package. He said the change package originated from the first couple decisions made for the Central Plateau. Comments were made that the Tri-Party Agreement (TPA) agencies do not have enough information to make appropriate cleanup decisions. He noted that EPA is in the process of negotiating with DOE to finish soil and water investigations in the Central Plateau. EPA hopes to have a change package available for public review in the next month. The committee agreed this should be an agenda item for the committee meeting in May.

Upcoming Decisions

The committee reviewed upcoming decisions on the CERCLA 5-year Review and the M-15 Change Package.

Regulator Perspectives

- Dennis said EPA provided DOE with comments on the CERCLA 5-Year. EPA has some concerns about the protectiveness statements made in the document.
- Dib said Ecology had several comments on the CERCLA 5-Year Review, specifically that groundwater remediation actions are considered interim. Ecology would also like to see more emphasis on contamination source investigations.

Committee Discussion

- Pam said it is important for the committee to closely track the CERCLA 5-year Review. Committee issue managers were given the CERCLA 5-Year Review draft, which they should evaluate and bring to the May committee meeting.

Planning for Board Tutorial and Product Development

The committee agreed some background information materials should be provided in the June Board meeting packet:

- Shelley and Greg agreed to compile a list of the top 20 groundwater and vadose zone acronyms. Dennis said the 2005 Groundwater Annual Report has a useful list of acronyms.
- DOE handouts on groundwater. Dib said Ecology also has pamphlets on groundwater, contamination plumes, and monitoring.
- One-page background information pieces on conceptual and numerical models.
- One-page background information on NRDA (possibly pulled from the web)

The committee discussed an approach and outline for the groundwater tutorial at the June Board meeting:

0. Issue Manager overview

- Rationale for tutorial
- Introduce need for groundwater values-based product

1. Tutorial Introduction – Mike Thompson, DOE-RL (30-40 minutes)

- What is known about the nature of groundwater and the vadose zone on the site? What is the status of what is known? What is unknown (uncertainties)? What has been done?
 - Look at the 10 groundwater operable units with their unique issues grouped by 100/200/300 Areas and sub-grouped by issue.
 - Describe conceptual models, to demonstrate DOE's remediation approach to address contamination, illustrate contaminant movement, and provide a timeframe for contaminant movement.
 - What is the long-term picture of groundwater contamination?
- Remediation tools to address groundwater contamination.
- Other contaminants in operable units that have not been characterized

2. Regulatory Requirements – Dennis Faulk, EPA (15 minutes), and John Price, Ecology (15 minutes)

- Pertinent Model Toxic Control Act (MTCA) information.
- Overview of Natural Resource Damage Assessment (NRDA) and how it is used.
- Decision process for a final groundwater decision example (1100 or 200 ZP 1).

3. Discussion of Examples – DOE and regulatory agencies (Mike Thompson, DOE-RL, Dennis Faulk, EPA, and Dib Goswami, Ecology)

- 100-N Area – strontium (⁹⁰Sr)
- 200 Area – carbon tetrachloride
- 300 Area – uranium
- Groundwater under tank farms

4. Trust Treaty Responsibilities – Russell Jim, Yakima Nation

- Natural Resource Trustee Council (NRTC) and NRDA handout

5. Discussion of Modeling – Joe Caggiano, Ecology, and Frank Anderson, CHG

- What does conceptual model provide?
- Why do a conceptual model? Use modeling as a tool to simplify the situation in order to develop a better understanding of the conditions. Helps compare different alternatives.
- How do decision-makers use modeling? Modeling is only one factor in the decision-making process.
- Why is modeling important?
- Why should the Board know about modeling? (There are several pending important decisions based on modeling)

- Discuss the significance of uncertainty

The committee developed a list of initial questions to serve as a foundation for the development of a groundwater values-based decision product. Issue managers need to think about how the tutorial will help inform the Board groundwater values-based decision product:

- What does return to highest beneficial use mean? How does time factor in? How does cost factor in if the water is not currently used as a drinking source?
- Sensitivity of parameters – are the right parameters being used?
- Level of uncertainty – how much data is needed to move forward?
- Is an appropriate timeframe being used?
- Set of questions to consider when constructing models (assumptions and impacts of changing them):
 - What does conceptual model give you?
 - Why do a conceptual model?
 - How do decision makers use modeling?
 - Why is modeling important? What should the Board know about modeling (i.e., pending release of important decisions and studies based largely on modeling)?

Committee Business

The committee discussed agenda topics for a full-day meeting on Wednesday, May 10:

- Dry run of groundwater presentations for the tutorial
- Issue manager review of CERCLA 5-Year Review
- M-15 Change Package
- A committee conference call is scheduled for Tuesday, April 18 at 9 a.m.
- Mike Thompson discussed the results of the peer review of the Hanford groundwater technology proposals. The proposals are the result of a \$10 million Congressional earmark to develop supplemental actions to protect the Columbia River from groundwater contamination. In general, the panel provided qualified support for all the proposals, except one to use geophysics for chromium source identification. DOE plans to rewrite this proposal to redirect the use of geophysics for further characterization of the subsurface geology at Hanford.

Action Items / Commitments

- Committee issue managers were given the CERCLA 5-Year Review draft, which they should evaluate and bring to the May committee meeting.
- Shelley and Greg agreed to compile a list of the top 20 groundwater and vadose zone acronyms.

- Mike will provide most updated map information on groundwater contamination for the June Board meeting.

Handouts

NOTE: Copies of meeting handouts can be obtained through the Hanford Advisory Board Administrator at (509) 942-1906, or tholm@enviroissues.com

- Handout on regulatory requirements, John Price, Ecology, 4/12/2006.
- The Value of a Conceptual Model for Adequate Site Characterization, John Caggiano, Ecology, 4/12/2006.
- 2006 Meetings and Public Comment Periods Timeline [March through August], 4/11/2006.

Attendees

HAB Members and Alternates

Shelley Cimon	Bob Parazin	John Stanfill
Greg deBruler	Jerry Peltier	Eugene Van Liew
Pam Larsen	Gerry Pollet	Steve White
Jeff Luke	Mike Priddy	
Jerri Main	David Rowland	
Nancy Murray	Dick Smith	

Others

Steve Chalk, DOE-RL	Rick Bond, Ecology	Frank Anderson, CHG
Karen Lutz, DOE-RL	Joe Caggiano, Ecology	Jim Field, CHG
Mike Thompson, DOE-RL	Dib Goswami, Ecology	Fred Mann, CHG
	John Price, Ecology	David Watson, CHG
		Penny Mabie, EnviroIssues
	Dennis Faulk, EPA	Jason Mulvihill-Kuntz, EnviroIssues
		Tom Fogwell, FH
		Barbara Wise, FH
		Floyd Hodges, Public (HoANW)
		Darla Jackson, Nez Perce Tribe
		Sharon Braswell, Nuvotec/ORP